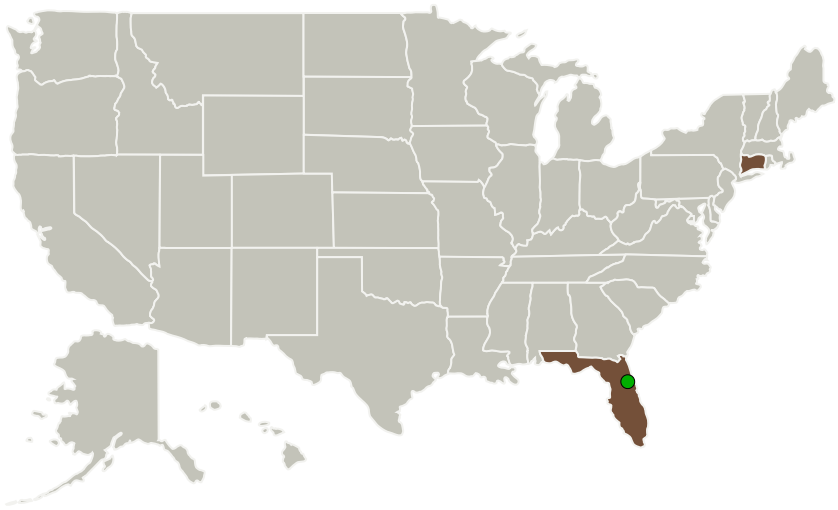
DURACON-IR: Durable and Conductive IR witness coatings for High Accuracy IR Thermography, Phase I

Completed Technology Project (2011 - 2011)

Project Introduction

An accurate assessment of composite structural performance and proactive component and system life management strategies requires quantitative information on the damage states of the components. Recent advances in infra-red (IR) sensing and data processing technologies have enabled real-time thermoelastic stress analysis (TSA) methodologies to finally become viable for accurate diagnostics and prognostics of composite structures. The success of these thermography methods, however, depends strongly on the characteristics of the surface layer. In this SBIR program Materials Technologies Corporation proposes to design, develop and implement specialized, multi-purpose witness layers for carbon composite structures which would facilitate high accuracy quantitative thermoelastic analysis through improved IR response and thus enable on-going in-situ diagnostics (and prognostics) during component lifecycle without necessitating disassembly and off-line inspection. Phase I program will be based on concept feasibility demonstration through extensive experimental and FE analysis. At the end of Phase II program, samples of developed coating systems will be delivered to the NASA program manager for further evaluation.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Materials Technologies Corporation	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB)	Monroe, Connecticut
Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida

Primary U.S. Work Locations	
Connecticut	Florida

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138110)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Materials Technologies Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

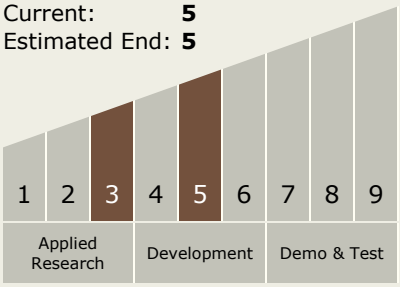
Carlos Torrez

Principal Investigator:

Yogesh Mehrotra

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
  - TX13.1 Infrastructure Optimization
    - TX13.1.7 Impact/Damage/Radiation Resistant Systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System